Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.   (Currently Amended) A method ~~An apparatus~~ for centrally managing a computer

network, including:

    maintaining a central database of all NASes known to the computer network; and

    broadcasting a message from said central database to a NAS list located at each POP in

the computer network whenever said central database is changed, said message containing

information regarding the change <u>such that a current version of said central database of all</u>

<u>NASes known to the computer network is maintained at said NAS list located at each POP</u>.

2.   (Original) The method of claim 1, wherein all of said NASes known to the computer

network are all NASes within the computer network which have been chosen as being valid.

3.   (Original) The method of claim 1, wherein said maintaining is performed by a Network

Control Console.

4.   (Original) The method of claim 3, wherein said Network Control Console is a graphical

interface.

5.   (Original) The method of claim 1, wherein said maintaining includes adding NASes,

deleting NASes, and modifying the entries of NASes in said central database as the need arises.

6.   (Original) The method of claim 1, wherein said broadcasting is performed automatically

by a broker whenever a change to said central database is made.

7.   (Original) The method of claim 1, wherein said broadcasting includes publishing a broker event via a broker.

8.   (Currently Amended) A method for locally processing an access request at a Point-of-Presence (PoP) in a computer network having other PoPs, said access request received from a NAS, the method including:

accessing a list of network access servers (NASes) known to the PoP and known to the computer network, said list located locally at the PoP and periodically updated via communication with a central database; and

validating that said access request was received from a known entity by determining if an entry exists in said list for the NAS from which the access request was received.

9.   (Original) The method of claim 8, further including retrieving a user record from a database of user records located locally at said PoP, said database of user records containing records for only those users who have been identified as having the PoP as their home PoP.

10.   (Original) The method of claim 8, wherein each entry in said list contains a field identifying a NAS and a field identifying a dictionary of attributes supported by the corresponding NAS.

11.   (Original) The method of claim 10, wherein said dictionary of attributes is a RADIUS dictionary.

12.   (Original) The method of claim 8, wherein said each entry in said list contains fields for:

a domain name of a NAS;

a vendor name of said NAS;

a shared secret between all known NASes and AAA servers in the network; and

a dictionary name, said dictionary name indicating a dictionary of attributes supported by said NAS.

13.   (Original) The method of claim 12, wherein said validating further includes validating that said access request was received from a known entity by determining if the domain name that the access request was received from matches the domain name field of any entry in said list.

14.   (Original) The method of claim 13, wherein said validating further includes examining whether a password supplied with said access request matches the shared secret field of a corresponding entry in said list if the domain name that the access request was received from matches the domain name field of any entry in said list.

15.   (Original) The method of claim 12, wherein said dictionary of attributes is a standard RADIUS dictionary.

16.   (Original) The method of claim 8, wherein said accessing and validating are performed by an Authentication, Authorization, and Accounting (AAA) server.

17.   (Original) The method of claim 8, further including subscribing to a broker event to update said list whenever a NAS known to the computer network is added, deleted, or modified.

18.   (Currently Amended) A method for handling an access request at a PoP, said access request generated by a user logging on to said PoP, said user having a home PoP, the method including:

accessing a list of network access servers (NASes) known to the PoP and known to a computer network containing the PoP, said list located locally at the PoP and periodically updated via communication with a central database;

validating that said access request was received from a known entity by determining if an entry exists in said list for the NAS from which the access request was received;

determining if said user's home PoP is said PoP;

forwarding said access request to an AAA server located at said PoP if said user's home PoP is said PoP; and

relaying said access request to said user's home PoP if said user's home PoP is not said PoP.

19.   (Original) The method of claim 18, wherein said determining, forwarding, and relaying are performed by a Protocol Gateway.

20.   (Original) The method of claim 18, wherein said determining includes examining a user name entered by said user.

21.   (Original) The method of claim 20, wherein said determining further includes parsing said user name to reveal a PoP location indicated within said user name.

22.   (Original) The method of claim 21, wherein said PoP location indicated within said user name is a city name as a prefix to said user name.

23.   (Original) The method of claim 21, wherein said PoP location indicated within said user name is an abbreviation for a city name contained within a domain name affixed to the end of said user name.

24.   (Original) The method of claim 20, wherein said determining further includes parsing said user name to reveal a domain name, said domain name indicating an ISP in control of said home PoP.

25.   (Original) An apparatus for centrally managing a computer network including:

a central NAS list maintainer;

a NAS list broadcaster coupled to said central NAS list maintainer and coupled to said computer network.

26.   (Original) The apparatus of claim 25, wherein said central NAS list maintainer and said NAS list broadcaster are contained within a Network Control Console.

27.   (Original) The apparatus of claim 25, wherein said central NAS list maintainer is coupled to a central NAS list, said central NAS list containing entries for each NAS known to the computer network.

28.   (Original) The apparatus of claim 27, wherein each NAS known to the computer network is a NAS which has been chosen as being valid.

29.   (Original) The apparatus of claim 25, wherein said NAS list broadcaster is coupled to a broker.

30.   (Currently Amended) An apparatus for locally processing an access request at a PoP in a computer network having other PoPs, said access request received from a NAS, the apparatus including:

a memory configured to store a NAS list, said NAS list containing entries on each NAS known to the PoP and known to the computer network and located locally at the PoP and periodically updated via communication with a central database;

a NAS list accessor coupled to said NAS list; and

an access request validator coupled to said NAS list accessor.

31.   (Original) The apparatus of claim 30, further including:

a user record database located locally at said PoP, said user record database containing records for only those users who have been identified as having the PoP as their home PoP; and

a user record retriever coupled to said user record database and coupled to said access request validator.

32.   (Original) The apparatus of claim 30, wherein each entry in said NAS list contains a field identifying a NAS and a field identifying a dictionary of attributes supported by the corresponding NAS.

33.   (Original) The apparatus of claim 32, wherein said dictionary of attributes is a RADIUS dictionary.

34.   (Original) The apparatus of claim 30, wherein said each entry in said list contains fields for:

a domain name of a NAS;

a vendor name of said NAS;

a shared secret between all known NASes and AAA servers in the network; and

a dictionary name, said dictionary name indicating a dictionary of attributes supported by said NAS.

35.   (Original) The apparatus of claim 33, wherein said dictionary of attributes is a standard RADIUS dictionary.

36.   (Original) The apparatus of claim 30, wherein said NAS list accessor and said access request validator are contained in an Authentication, Authorization, and Accounting (AAA) server.

37.   (Original) The apparatus of claim 30, further including:

a broker event subscriber coupled to said NAS list.

38.   (Currently Amended) An apparatus for handling an access request at a PoP, said access request generated by a user logging on to said PoP, said user having a home PoP, the apparatus including:

a memory configured to store a NAS list, said NAS list containing entries on each NAS

known to the PoP and known to a computer network containing the PoP, and located locally at

the PoP and periodically updated via communication with a central database;

a NAS list accessor coupled to said NAS list;

an access request validator coupled to said NAS list accessor;

a user home PoP determiner; and

an access request forwarder coupled to said user home PoP determiner, said access

request forwarder coupled to an AAA server if the PoP is said user's home PoP and coupled to a

computer network if the PoP is no said user's home PoP.

39.   (Original) The apparatus of claim 38, wherein said user home PoP determiner and said

access request forwarder are contained within a Protocol Gateway.

40.   (Currently Amended) A program storage device readable by a machine, tangibly

embodying a program of instructions executable by the machine to perform a method for

centrally managing a computer network, the method including:

maintaining a central database of all NASes known to the computer network; and

broadcasting a message to a NAS list located at each POP in the computer network

whenever said central database is changed, said message containing information regarding the

change such that a current version of said central database of all NASes known to the computer

network is maintained at said NAS list located at each POP.

41.   (Currently Amended) A program storage device readable by a machine, tangibly

embodying a program of instructions executable by the machine to perform a method for locally

processing an access request at a Point-of-Presence (PoP) in a computer network having other

PoPs, said access request received from a NAS, the method including:

accessing a list of network access servers (NASes) known to the PoP and known to the

computer network, said list located locally at the PoP and periodically updated via

communication with a central database; and

validating that said access request was received from a known entity by determining if an

entry exists in said list for the NAS from which the access request was received.

42.   (Currently Amended) A program storage device readable by a machine, tangibly

embodying a program of instructions executable by the machine to perform a method for

handling an access request at a PoP, said access request generated by a user logging on to said

PoP, said user having a home PoP, the method including:

accessing a list of network access servers (NASes) known to the PoP and known to a

computer network containing the PoP, said list located locally at the PoP and periodically

updated via communication with a central database;

validating that said access request was received from a known entity by determining if an

entry exists in said list for the NAS from which the access request was received;

determining if said user's home PoP is said PoP;

forwarding said access request to an AAA server located at said PoP if said user's home

PoP is said PoP; and

relaying said access request to said user's home PoP if said user's home PoP is not said

PoP.

43.   (Currently Amended) An apparatus for centrally managing a computer network, including:

means for maintaining a central database of all NASes known to the computer network; and

means for broadcasting a message from said central database to a NAS list located at each POP in the computer network whenever said central database is changed, said message containing information regarding the change such that a current version of said central database of all NASes known to the computer network is maintained at said NAS list located at each POP.

44.   (Previously Presented) The apparatus of claim 43, wherein all of said NASes known to the computer network are all NASes within the computer network which have been chosen as being valid.

45.   (Previously Presented) The apparatus of claim 43, wherein said means for maintaining is a Network Control Console.

46.   (Previously Presented) The apparatus of claim 45, wherein said Network Control Console is a graphical interface.

47.   (Previously Presented) The apparatus of claim 43, wherein said means for maintaining includes means for adding NASes, deleting NASes, and modifying the entries of NASes in said central database as the need arises.

48. (Previously Presented) The apparatus of claim 43, wherein said broadcasting is performed automatically by a broker whenever a change to said central database is made.

49. (Previously Presented) The apparatus of claim 43, wherein said means for broadcasting includes means for publishing a broker event via a broker.

50. (Currently Amended) An apparatus for locally processing an access request at a Point-of-Presence (PoP) in a computer network having other PoPs, said access request received from a NAS, the apparatus including:

means for accessing a list of network access servers (NASes) known to the PoP and known to the computer network, said list located locally at the PoP and periodically updated via communication with a central database; and

means for validating that said access request was received from a known entity by determining if an entry exists in said list for the NAS from which the access request was received.

51. (Previously Presented) The apparatus of claim 50, further including means for retrieving a user record from a database of user records located locally at said PoP, said database of user records containing records for only those users who have been identified as having the PoP as their home PoP.

52. (Previously Presented) The apparatus of claim 50, wherein each entry in said list contains a field identifying a NAS and a field identifying a dictionary of attributes supported by the corresponding NAS.

53.   (Previously Presented) The apparatus of claim 52, wherein said dictionary of attributes is a RADIUS dictionary.

54.   (Previously Presented) The apparatus of claim 50, wherein said each entry in said list contains fields for:

a domain name of a NAS;

a vendor name of said NAS;

a shared secret between all known NASes and AAA servers in the network; and

a dictionary name, said dictionary name indicating a dictionary of attributes supported by said NAS.

55.   (Previously Presented) The apparatus of claim 54, wherein said means for validating further includes means for validating that said access request was received from a known entity by determining if the domain name that the access request was received from matches the domain name field of any entry in said list.

56.   (Previously Presented) The apparatus of claim 55, wherein said means for validating further includes means for examining whether a password supplied with said access request matches the shared secret field of a corresponding entry in said list if the domain name that the access request was received from matches the domain name field of any entry in said list.

57.   (Previously Presented) The apparatus of claim 54, wherein said dictionary of attributes is a standard RADIUS dictionary.

58.   (Previously Presented) The apparatus of claim 50, wherein said means for accessing and means for validating are an Authentication, Authorization, and Accounting (AAA) server.

59.   (Previously Presented) The apparatus of claim 50, further including means for subscribing to a broker event to update said list whenever a NAS known to the computer network is added, deleted, or modified.

60.   (Currently Amended) An apparatus for handling an access request at a PoP, said access request generated by a user logging on to said PoP, said user having a home PoP, the apparatus including:

   means for accessing a list of network access servers (NASes) known to the PoP and known to a computer network containing the PoP, said list located locally at the PoP and periodically updated via communication with a central database;

   means for validating that said access request was received from a known entity by determining if an entry exists in said list for the NAS from which the access request was received;

   means for determining if said user's home PoP is said PoP;

   means for forwarding said access request to an AAA server located at said PoP if said user's home PoP is said PoP; and

   means for relaying said access request to said user's home PoP if said user's home PoP is not said PoP.

61.   (Previously Presented) The apparatus of claim 60, wherein said means for determining, means for forwarding, and means for relaying are a Protocol Gateway.

62.   (Previously Presented) The apparatus of claim 60, wherein said means for determining includes means for examining a user name entered by said user.

63.   (Previously Presented) The apparatus of claim 62, wherein said means for determining further includes means for parsing said user name to reveal a PoP location indicated within said user name.

64.   (Previously Presented) The apparatus of claim 63, wherein said PoP location indicated within said user name is a city name as a prefix to said user name.

65.   (Previously Presented) The apparatus of claim 63, wherein said PoP location indicated within said user name is an abbreviation for a city name contained within a domain name affixed to the end of said user name.

66.   (Previously Presented) The apparatus of claim 62, wherein said means for determining further includes means for parsing said user name to reveal a domain name, said domain name indicating an ISP in control of said home PoP.

67.   (New) A method for managing a computer network, including:

maintaining a central database of all NASes known to the computer network;

broadcasting a message from said central database to a NAS list located at each PoP in the computer network whenever said central database is changed, said message containing information regarding the change;

receiving said message at said NAS list located at each PoP in the computer network;

updating said NAS list to reflect the change;

receiving an access request at a PoP, said access request generated by a user logging on to said PoP, said user having a home PoP;

accessing said NAS list;

validating that said access request was received from a known entity by determining if an entry exists in said list for the NAS from which the access request was received;

determining if said user's home PoP is said PoP;

forwarding said access request to an AAA server located at said PoP if said user's home PoP is said PoP; and

relaying said access request to said user's home PoP if said user's home PoP is not said PoP.

68.   (New) The method of claim 67, wherein all of said NASes known to the computer network are all NASes within the computer network which have been chosen as being valid.

69.   (New) The method of claim 67, wherein said maintaining includes adding NASes, deleting NASes, and modifying the entries of NASes in said central database as the need arises.

70.   (New) The method of claim 67, wherein said broadcasting includes publishing a broker event via a broker.

71.   (New) The method of claim 67, wherein said central database and said PoP are operated by different corporate entities.

72.   (New) An apparatus for managing a computer network, including:

means for maintaining a central database of all NASes known to the computer network;

means for broadcasting a message from said central database to a NAS list located at each

PoP in the computer network whenever said central database is changed, said message containing

information regarding the change;

means for receiving said message at said NAS list located at each PoP in the computer

network;

means for updating said NAS list to reflect the change;

means for receiving an access request at a PoP, said access request generated by a user

logging on to said PoP, said user having a home PoP;

means for accessing said NAS list;

means for validating that said access request was received from a known entity by

determining if an entry exists in said list for the NAS from which the access request was

received;

means for determining if said user's home PoP is said PoP;

means for forwarding said access request to an AAA server located at said PoP if said

user's home PoP is said PoP; and

means for relaying said access request to said user's home PoP if said user's home PoP is

not said PoP.

73.   (New) The apparatus of claim 72, wherein all of said NASes known to the computer

network are all NASes within the computer network which have been chosen as being valid.

74.   (New) The apparatus of claim 72, wherein said means for maintaining includes means

for adding NASes, means for deleting NASes, and means for modifying the entries of NASes in said central database as the need arises.

75.   (New) The apparatus of claim 72, wherein said means for broadcasting includes means for publishing a broker event via a broker.

76.   (New) The apparatus of claim 72, wherein said central database and said PoP are operated by different corporate entities.

77.   (New) A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for managing a computer network, the method including:

maintaining a central database of all NASes known to the computer network;

broadcasting a message from said central database to a NAS list located at each PoP in the computer network whenever said central database is changed, said message containing information regarding the change;

receiving said message at said NAS list located at each PoP in the computer network;

updating said NAS list to reflect the change;

receiving an access request at a PoP, said access request generated by a user logging on to said PoP, said user having a home PoP;

accessing said NAS list;

validating that said access request was received from a known entity by determining if an entry exists in said list for the NAS from which the access request was received;

determining if said user's home PoP is said PoP;

forwarding said access request to an AAA server located at said PoP if said user's home

PoP is said PoP; and

relaying said access request to said user's home PoP if said user's home PoP is not said

PoP.